

U.S. Patent Application No. 09/606,575

REMARKS

1. Applicant thanks the Examiner for the Examiner's comments which have greatly assisted Applicant in responding.

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Applicant respectfully points out that the Examiner did not mark whether or not the response to final was entered. Applicant assumes the response was entered. Nevertheless, Applicant retains herein the remarks from such response, in addition to remarks to the Advisory Action cited hereinabove.

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2. Request for Reconsideration.

(a) On page 2 of the Advisory Action, the Examiner stated the following:

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The Examiner wants to mention that the Applicant's specification only mentioned a "multiple entity profile" in the last page of the specification, page 32, lines 19-20 and, that part, does not explain how to generate a multiple entity profile. Applicant's specification mentioned "multiple interacting entities" and "interaction of multiple entities" (see page 7, lines 3-8) but those terms are not the same as Applicant's "multiple entity profile". Therefore, the Examiner is interpreting Applicant's "multiple entity profile" as Prezioso's "physician peer group".

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Applicant respectfully disagrees with the Examiner's interpretation. Support follows.

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First, Applicant respectfully points out the definition of entity, on page 2, lines 5-12 (emphasis added):

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An entity is an operational unit within a given setting, application or environment and represents objects that interact within that setting, application or environment. The members of an entity are generally objects of a similar type. Different entities interact with each other and their interactions are encapsulated in the transaction data corresponding to that application. Thus, examples of entities in a healthcare setting are clients, providers (this includes doctors, hospitals, pharmacies, etc.), clients' families, etc. and their interactions are captured in the claims data; i.e. the interaction of a healthcare provider and a patient is captured in a claim by the provider for reimbursement.

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It is evident from the above that a plurality of physicians being compared to one another, "physician's peer group," are a single entity: "Thus, examples of entities in a healthcare setting are ... providers (this includes doctors,... ."

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Further support can be found as follows (emphasis added):

(On page 15, line 8-12 (target entity T is the physician entity)

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2. Roll-up Process After the derive process 105, the second step in the direct profile construction 103 is the roll-up process 109. The roll-up process 109 is done with respect to a certain entity (termed the roll-up entity). In Fig. 1 above, the roll-up entity is the target entity T as indicated by the label T on the dataset 102.

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(On page 13, Table 4)

Provider ID	Profile Variable 1: No. of services	Profile Variable 2: Total \$ Paid	Profile Variable X: \$ per claim
P1	5	\$101.45	\$20.29
P2	2	\$107.50	\$53.75
P3	4	\$196.21	\$49.05
P4	1	\$15.25	\$15.25
P5	1	\$700.00	\$700.00
P6	3	\$209.36	\$69.79
P7	2	\$4.00	\$2.00
P8	1	\$26.87	\$26.87

(On page 16, lines 26-28)

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Applying the derive process 105 and roll-up process 109 as described above, results in the conversion of the raw transaction data in Table 3 to the profile dataset for the target entity as depicted in Table 4.

Applicant respectfully points out the meaning of multiple entities from the application as filed as follows ((emphasis added):

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(On page 6, line 20 through page 7, line 8)

The present invention provides a refined and modular approach to deriving profiles from transactional data that enables an in-depth characterization of any

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target entity. The approach is based on profiling not only the target entity itself, but also other entities that interact with the target entity via transactions. This includes profiling the interacting pairs of entities themselves as entities. The profiles of different entities are merged and rolled-up in appropriate logical steps to produce a sophisticated set of features describing the activity of the target entity. Any desired profile variable (i.e., a behavioral feature based on the transactional data) for a given entity can be derived through this process. The result of this process is a cascaded profile that describes and summarizes the historical transaction patterns of multiple interacting entities, such as the transaction patterns of entity pairs (e.g., the transaction pattern of a particular provider and client together). The cascaded profile provides summary level statistics that are not available merely by summarizing transactions across a single individual entity, but only arise out of the interactions of multiple entities.

Also, Claim 1 in the application as filed defines multiple entity as follows (emphasis added):

generating at least one multiple entity profile of at least one multiple entity defined by a combination including individual entities, from historical transactions that include the members of each of the individual entities included in a multiple entity; and

Hence, a multiple entity is a combination which includes individual entities.

Applicant has amended the Specification to include such definition; see Amendment to the Specification.

Finally, the application as filed makes clear how to generate a profile of an entity, as follows (emphasis added):

(On page 17, lines 1-9):

Profiling Interacting Entities

The previous section illustrated and described the direct process of deriving a profile for a single roll-up entity (where the resulting profile datasets comprise one observation for each member of the entity), from a dataset

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5 where each member of the entity may have multiple observations. This simple direct process can be used as the basic unit in developing a methodology to create a profile for a target entity by building profiles for multiple interacting entities in a cascaded sequence. This methodology is one aspect of the present invention and is described below. The terms derive and roll-up as described in the previous section are used with the same meaning in this section.

10 Hence, the meaning of "multiple entity profile" is clear from the specification as filed and is not Prezioso's "physician peer group."

(b) On page 2 of the Advisory Action, the Examiner also stated the following:

15 Applicant's "enhancing at least one single entity profile using at least one multiple entity profile to generate the enhanced profile" equals in Prezioso to "determination of behavior characteristics from the physician profile".

Applicant respectfully disagrees.

20 In view of the above, it is evident that "using at least one multiple entity profile to generate the enhanced profile" by definition cannot be "determination of behavior characteristics from the physician profile." Prezioso's "the physician profile" is a profile of a member of a single entity profile and is not a multiple entity profile of the claimed invention.

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3. 35 U.S.C. §102(b).

The Examiner has rejected Claims 1-46 under 35 U.S.C. §102(b) as being anticipated by Prezioso (U.S. Patent No. 5,577,169).

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Claim 1

Claim 1 appears as follows (emphasis added):

35 1. (previously presented) A computer implemented method of generating an enhanced profile of an individual entity, the profile including for each member of the

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individual entity, a single observation having at least one variable describing historical transactions pertaining to that member, the method comprising:

generating at least one single entity profile of an individual entity having individual members, from historical transactions of the members of the individual entity;

generating at least one multiple entity profile of at least one multiple entity defined by a combination comprising individual entities and interacting pairs of entities, from historical transactions that include the members of each of the individual entities included in a multiple entity and that include interacting pairs of entities; and

enhancing at least one single entity profile using at least one multiple entity profile to generate the enhanced profile.

The Examiner stated that Prezioso anticipates (emphasis by the Examiner): "generating at least one multiple entity profile of at least one multiple entity defined by a combination comprising individual entities and interacting pairs of entities, from historical transactions that include the members of each of the individual entities included in a multiple entity and that include interacting pairs of entities;".

As evidence, the Examiner then cited the Background section of Prezioso and col. 8, lines 53-64.

Regarding the Background section of Prezioso. Again, Applicant is of the opinion that if the Examiner, in placing a statutory bar against the Applicant, is using the entire background section, *without any explanation or notes as to why or what parts by the Examiner*, such Background encompassing *two entire columns' worth of description*, that the Examiner is putting the Applicant in the position of having to create estoppel against the Applicant by arguing against the entire Background section.

Is the Examiner suggesting that it takes the entire two columns to anticipate a particular feature of the claimed invention?

Applicant respectfully requests that the Examiner make clear what part of the background section anticipates the feature in question, and not put Applicant in the position of making the Examiner's argument for him, as the only way to be able to refute it.

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Col. 8, lines 53-64 appears as follows (emphasis added):

5 As an example, **when profiling physicians to search for fraud**, there are
many well known indicators of fraud that can be used as behavior characteristics.
Some examples are: an abnormally high percentage of office visits taking place on
Sundays and Holidays; an abnormally high percentage of office visits for patients
living outside the normal geography of the physician's practice; an unusually high
percentage of radiology visits; an unusually high average age for the patients of a
10 pediatrician; an unusually high number of patients treated in a single day.

Again, the Examiner neglected to point out which features of the citation are being used
as a statutory bar against Applicant or anticipates the same feature(s) of the claimed
invention. Again, lacking any explanation by the Examiner, Applicant is put in the
15 position of having to make assumptions in order to understand the Examiner's position.

Nevertheless, Applicant respectfully points out that what Prezioso teaches in the citation
clearly and unambiguously refers to profiling a target entity (physician) to search for
fraud (see hereinabove).

20 Prezioso is completely silent to generating at least one multiple entity profile of at
least one multiple entity defined by a combination comprising individual entities
and interacting pairs of entities, from historical transactions that include the
members of each of the individual entities included in a multiple entity and that
25 include interacting pairs of entities.

Applicant respectfully requests that the Examiner make unequivocally clear which entity
of Prezioso is the **at least one multiple entity defined by a combination comprising
individual entities and interacting pairs of entities.**

30 In stark contrast, as seen in Fig. 5 of the application as filed, the invention generates at
least one multiple entity profile of at least one multiple entity defined by a
combination comprising individual entities and interacting pairs of entities, from
historical transactions that include the members of each of the individual entities
35 included in a multiple entity and that include interacting pairs of entities, *i.e.*
Provider T 510.

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Again, Prezioso is completely silent on the claimed invention's Provider T 510.

Applicant is of the opinion that what the Examiner cited is nothing other than data reflecting transaction data *for the provider (physician) only*. What the Examiner cited as a statutory bar against the claimed invention can correspond to the claimed invention's Provider T 502, as seen in the application as filed on page 17, lines 10-18, as follows:

Thus, for example, profiling process 501 is applied to Transaction Data 500 with respect to the target entity of Providers, to summarize information for each individual provider across all the transactions corresponding to that provider, hence creating a direct profile of each provider, which profiles are stored in Provider profile dataset 502. Examples of variables that could be created in this process for each individual provider are total dollars paid to the provider, average dollars paid per transaction, average number of transactions per month by the provider, etc. Likewise, direct profiling 501 is applied to the Transaction Data 500 on each Provider/Client pair to produce Provider/Client dataset 504, and on each client, to produce Client dataset 506.

As seen in the application as filed, the ability to calculate Prezioso's *an abnormally high percentage of office visits taking place on Sundays and Holidays; an abnormally high percentage of office visits for patients living outside the normal geography of the physician's practice; an unusually high percentage of radiology visits; an unusually high average age for the patients of a pediatrician; an unusually high number of patients treated in a single day* does not anticipate the claimed invention.

To further clarify this point to the Examiner, Applicant respectfully points out the example of ping-ponging, which is enabled by the claimed invention and is not enabled by Prezioso. Support can be found in the application as filed on page 17 line 30 through page 18, line 24, as follows (emphasis added):

The entire process shown in Fig. 5 can thus be described as follows. On the first pass through the Transaction Data 500, the data is sorted by Provider and provider-based features like average dollars per claim, distribution of activity across procedure code groups, client age groups, etc. are computed. This creates the provider profiles in Provider dataset 502. **However, to enhance our understanding**

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of the Provider, it is desirable to understand the client interactions that the Provider has had, and indeed the clients that the Provider has interacted with. Hence, the transaction data 500 is sorted by each Client, to compute client features like number of different Providers seen in a given day, total volume of services/dollars, procedure mix, etc., thereby creating client profiles in Client dataset 506. In a third pass, the transaction data 500 is sorted by each Provider-Client pair and variables based on the Provider-Client entity, such as total number of services, total dollars per pair, mix of procedures performed, etc. are computed, thereby creating Provider/Client dataset 504. Note that these three passes are completely independent of each other (except for the fact that they use the same transaction data 500 as input, although sorted differently) and could be performed in parallel.

The client and provider-client features are then combined 507 by the enhance process to produce an enhanced Provider/Client dataset 508 of provider-client variables. For example, by dividing the total number of services for a given Provider-Client pair by the total number of services for a given client, the percent of the client's activity that is done by the given provider can be computed.

Finally, the provider variables in the topmost Provider dataset 502 and the enhanced provider-client variables in the Provider/Client dataset 508 are merged 509 by provider and then rolled up across all clients seen by a given provider to produce an enhance Provider profile dataset 510. *For example, a variable that captures the percentage of a given provider's clients seeing other providers on the same day that the given provider is visited can be computed at this step and may reveal cases of "ping-ponging" (i.e., fraud schemes where nearby providers collude in fraudulent/abusive activity by performing unnecessary services on each other's clients).*

Further support can be found in the application as filed on page 21, lines 10-12, as follows (emphasis added):

- Multiple Providers Same Day. This measures the degree to which *the provider's clients receive services from other providers* whenever they receive services from the given provider.

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Prezioso is completely silent on the above. Prezioso does not enable ping-ponging and measuring Multiple Providers Same Day.

Regarding enhancing at least one single entity profile using at least one multiple entity profile to generate the enhanced profile, the Examiner cited *three columns*, col. 7-9, *without explanation*. Once again, it is unclear (and unfair) to Applicant without the Examiner's explanation as to what the Examiner is citing to create a statutory bar against Applicant's enhancing at least one single entity profile using at least one multiple entity profile to generate the enhanced profile. Is the Examiner suggesting that it take the entire three columns to enhancing at least one single entity profile using at least one multiple entity profile to generate the enhanced profile?

Again, Applicant is of the opinion that the Examiner, *without further explanation or a more specific citation*, is unfairly putting Applicant in the position of creating undeserving estoppel by making it necessary for Applicant to first identify which feature(s) of the prior art of record is meant by the Examiner to anticipate the feature(s) of the claimed invention.

Nevertheless, the claim language and support in the application as filed has made clear that the prior art of record does not teach all features of the claimed invention, namely, generating at least one multiple entity profile of at least one multiple entity defined by a combination comprising individual entities and interacting pairs of entities, from historical transactions that include the members of each of the individual entities included in a multiple entity and that include interacting pairs of entities; and enhancing at least one single entity profile using at least one multiple entity profile to generate the enhanced profile, which is further supported by the fact that the claimed invention enables ping-ponging and measuring Multiple Providers Same Day, and which the prior art of record cannot enable.

Further, in the Examiner's Response to Arguments, the Examiner answered to Applicant's position that Prezioso does not teach interacting pair of entities by stating as follows, that Prezioso teaches (emphasis added):

"...when profiling physicians to search for fraud, there are many well known indicators of fraud that can be used as behavior characteristics. Some examples are: an abnormally high percentage of office visits taking place on Sundays and

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Holidays; an abnormally high percentage of office visits for patients living outside the normal geography of the physician's practice; an unusually high percentage of radiology visits; an unusually high average age for the patients of a pediatrician; an unusually high number of patients treated in a single day.

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Similarly, when profiling cashier behavior, there are many types of cash register transactions that indicate suspect behavior such as: an unusually high number of No Sale transactions; an abnormally high percentage of Voided transactions; an unusually low percentage of Scanned sales; an unusually high percentage of Returns...

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As an example, in profiling physician behavior to search for fraud, a behavior characteristic such as an unusually high percentage of office visits on Sundays and Holidays is quantified by 1) defining the dates of all Sundays and Holidays occurring during the profile horizon, 2) defining all the procedure codes that comprise office visits, 3) summing all the procedures for a given physician where the procedure code matches a procedure code defined as an office visit, 4) summing all the office visit procedures for a given physician where the date of service matches one of the dates determined as a Sunday or Holiday, and 5) dividing the number of Sunday and Holiday office visits by the total number of office visits. The value for each behavior characteristic is stored on System component 120 in a form that is easily retrievable and relates to the specific provider and behavior characteristic."

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The Examiner's only explanation is to state that Prezioso teaches interacting pair of entities from historical transactions that include interacting pair of entities, i.e. patient and physician.

Applicant respectfully disagrees.

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Again, Applicant respectfully points out that all the Prezioso citation shows are data from a target entity profile and its transactions, and, for example, not any other profile as in the claimed invention, to wit, Client (A) 506 and Provider/Client (T/A) 504 of the claimed invention.

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Therefore, in view of the above, Prezioso does not teach all limitations of Claim 1. Accordingly, Applicant is of the opinion that Claim 1 and the dependent claims are in condition for allowance.

- 5 For the same rationale, Applicant is of the opinion that Prezioso does not teach all features of the remaining claims. Accordingly Applicant is of the opinion that Claims 1-46 are in condition for allowance.

- 10 Hence, Applicant respectfully requests that the Examiner withdraw the rejection under 35 U.S.C. §102(b).

CONCLUSION

- 15 Based on the foregoing, Applicant considers the present invention to be distinguished from the art of record. Accordingly, Applicant earnestly solicits the Examiner's withdrawal of the rejections raised in the above referenced Office Action, such that a Notice of Allowance is forwarded to Applicant, and the present application is therefore allowed to issue as a United States patent. The Examiner is invited to call to discuss the response. The Commissioner is hereby authorized to charge any additional fees
20 due or credit any overpayment to Deposit Account No. 07-1445.

Respectfully Submitted,



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Julia Thomas

Reg. No. 52,283

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